



# Mineral Industry Surveys

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## TITANIUM IN THE THIRD QUARTER 2008

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the third quarter of 2008 were 9,330 metric tons (t), a 5% increase compared with shipments in the previous quarter. Receipts of titanium scrap totaled 7,530 t, a 10% decrease compared with receipts from the previous quarter. Ingot producer shipments totaled 4,060 t, an 11% decrease compared with shipments from the previous quarter.

Approximately 77% of mill products and castings were used in commercial and military aerospace applications. Other applications for titanium mill products and castings included, in descending order, industrial, medical, nonaerospace military, and consumer uses. Data for titanium metal products are developed by the USGS from a voluntary survey of domestic operations. Data for nonrespondents were estimated based on previously reported data.

TABLE 1  
COMPONENTS OF U.S. TITANIUM METAL SUPPLY AND DEMAND<sup>1</sup>

(Metric tons)

	2007			2008			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
<b>Production:</b>							
Sponge	W	W	W	W	W	W	W
Ingot	14,400	14,900	59,200	14,500	15,800	15,100	45,400
Mill products	9,620	9,770	38,200	9,490	10,100	10,800	30,300
<b>Exports:</b>							
Waste and scrap	1,380	1,820	9,510	1,590	1,730	3,480	6,790
Sponge	554	319	2,000	403	513	1,040	1,950
Ingot	530	412	2,270	260	311	84	655
Other unwrought	255	214	1,000	493	494	765	1,750
Bar, rod, profiles, wire	628	723	2,840	886	804	783	2,470
Billet	658	609	2,730	716	769	810	2,300
Bloom, sheet bar, slab	382	520	1,280	421	713	522	1,660
Other wrought	2,070	2,350	8,670	2,460	2,540	2,790	7,790
Total	6,460	6,960	23,300	7,220	7,870	10,300	25,400
<b>Imports:</b>							
Waste and scrap	2,850	2,800	12,200	2,540	2,730	3,140	8,410
Sponge <sup>2</sup>	6,830	6,970	25,900	6,320	6,130	6,210	18,700
Ingot	589	549	2,270	326	220	317	862
Powder	23	68	246	17	52	40	109
Other unwrought	9	7	101	23	21	10	54
Wrought	1,300	1,510	4,970	2,010	1,720	2,520	6,250
Castings	1	10	23	1	6	2	10
Other	90	59	350	81	65	69	215
Total	11,100	12,000	46,100	11,300	10,900	12,300	34,000
<b>Stocks, end of period:</b>							
Sponge, industry	7,780	7,820	XX	10,400	11,300	11,900	XX
Scrap	11,900	12,600	XX	W	W	W	XX
Ingot	5,740	5,150	XX	5,000	4,920	4,460	XX
<b>Consumption:</b>							
Sponge	7,800	8,180	33,700	8,590	W	8,730	W
Scrap	5,990	5,870	23,800	5,580	5,540	6,030	17,100
Ingot	12,500	12,900	50,300	12,300	12,700	12,300	37,300
<b>Shipments:</b>							
Ingot (producer net shipments) <sup>3</sup>	4,060	4,130	11,900	4,070	4,580	4,060	12,700
<b>Mill products (net shipments):</b>							
Forging and extrusion billet	3,110	3,030	12,400	3,260	3,230	3,020	9,510
Plate, sheet, strip	3,790	3,910	14,700	3,370	3,940	4,320	11,600
Other	1,460 <sup>r</sup>	1,590	6,040	1,620	1,680	1,990	5,290
Total	8,360	8,530	33,200	8,250	8,850	9,330	26,400
Castings	431	434	1,760	W	W	W	W
<b>Receipts, scrap:</b>							
Home	3,390	2,890	12,300	3,770	W	W	W
Purchased	4,640	4,200	18,800	5,040	W	W	W
Total	8,040	7,090	31,100	8,800	8,380	7,530	24,700

W Withheld to avoid disclosing company proprietary data. XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Estimated by the U.S. Geological Survey.

<sup>3</sup>Data series revised to include only ingot producers.

TABLE 2  
U.S. EXPORTS OF TITANIUM PRODUCTS<sup>1</sup>

(Metric tons)

	2007			2008			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
<b>Metal:</b>							
Waste and scrap	1,380	1,820	9,510	1,590	1,730	3,480	6,790
<b>Unwrought:</b>							
Sponge	554	319	2,000	403	513	1,040	1,950
Ingot	530	412	2,270	260	311	84	655
Other unwrought	255	214	1,000	493	494	765	1,750
<b>Wrought:</b>							
Bar, rod, profiles, wire	628	723	2,840	886	804	783	2,470
Billet	658	609	2,730	716	769	810	2,300
Bloom, sheet bar, slab	382	520	1,280	421	713	522	1,660
Other	2,070	2,350	8,670	2,460	2,540	2,790	7,790
Ferrotitanium and ferrosilicon titanium	433	500	2,120	421	510	306	1,240
Ores and concentrates	2,720	863	9,730	3,320	5,500	2,220	11,000
<b>Pigment:</b>							
80% or more titanium dioxide	145,000	160,000	564,000	152,000	184,000	192,000	527,000
Other titanium dioxide	32,300	25,800	111,000	22,200	19,700	11,400	53,300
Unfinished titanium dioxide <sup>2</sup>	1,350	946	7,200	946	1,620	1,500	4,070

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM METAL<sup>1</sup>

(Metric tons)

	2007			2008			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
<b>Waste and scrap:</b>							
Canada	228	259	908	194	245	187	626
China	50	3	275	11	122	41	173
France	481	381	1,670	310	393	557	1,260
Germany	286	325	1,430	255	278	378	911
Japan	595	461	2,210	524	405	718	1,650
Mexico	77	47	176	70	66	30	166
Russia	68	120	472	78	58	18	153
Taiwan	127	267	953	111	180	100	391
United Kingdom	629	589	2,700	568	725	847	2,140
Other	309	352	1,440	416	259	264	940
<b>Total</b>	<b>2,850</b>	<b>2,800</b>	<b>12,200</b>	<b>2,540</b>	<b>2,730</b>	<b>3,140</b>	<b>8,410</b>
<b>Unwrought:</b>							
<b>Sponge:</b>							
China	655	455	2,220	377	701	183	1,260
Japan	2,140	2,260	8,250	1,950	1,910	2,120	5,980
Kazakhstan <sup>c</sup>	3,680	3,840	13,800	3,650	2,760	3,240	9,650
Russia	124	159	822	111	139	250	501
Ukraine	116	256	703	237	491	354	1,080
Other <sup>2</sup>	120	1	151	--	128	60	188
<b>Total</b>	<b>6,830</b>	<b>6,970</b>	<b>25,900</b>	<b>6,320</b>	<b>6,130</b>	<b>6,210</b>	<b>18,700</b>
<b>Ingot:</b>							
Germany	280	250	884	164	80	218	462
Russia	309	282	1,300	129	97	82	308
Other	--	17	78	32	43	17	92
<b>Total</b>	<b>589</b>	<b>549</b>	<b>2,270</b>	<b>326</b>	<b>220</b>	<b>317</b>	<b>862</b>
Powder	23	68	246	17	52	40	109
Other	9	7	101	23	21	10	54
<b>Wrought:</b>							
Bar, rod, profiles, wire	389	366	1,410	552	220	371	1,140
Billet	197	295	754	464	229	401	1,090
Bloom, sheet bar, slab	8	4	45	31	266	839	1,140
Plate, sheet, strip, foil	642	791	2,450	817	675	717	2,210
Tube and pipe	26	26	109	28	66	55	149
Other	39	30	207	116	261	140	518
<b>Total</b>	<b>1,300</b>	<b>1,510</b>	<b>4,970</b>	<b>2,010</b>	<b>1,720</b>	<b>2,520</b>	<b>6,250</b>
<b>Other articles of titanium:</b>							
Castings	1	10	23	1	6	2	10
Other	90	59	350	81	65	69	215
<b>Ferrotitanium and ferrosilicon titanium</b>	<b>2,270</b>	<b>610</b>	<b>7,620</b>	<b>1,170</b>	<b>722</b>	<b>467</b>	<b>2,360</b>

<sup>c</sup>Estimated. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM CONCENTRATES<sup>1</sup>

(Metric tons)

	2007			2008			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
<b>Ilmenite:</b>							
Australia	91,700	24,700	228,000	43,300	63,300	70,500	177,000
Mozambique	--	--	--	50,500	203	32,600	83,300
Sierra Leone	12,000	--	12,000	--	--	--	--
South Africa	5,990	--	5,990	--	21,000	--	21,000
Ukraine	--	--	--	20,400	--	--	20,500
Total	110,000	24,700	246,000	114,000	84,500	103,000	302,000
<b>Titanium slag:</b>							
Canada	48,100	79,800	193,000	6,010	40,000	13,600	59,600
South Africa	99,400	156,000	475,000	109,000	121,000	57,000	287,000
Other <sup>2</sup>	15,000	4	80,700	--	--	--	--
Total	162,000	236,000	749,000	115,000	161,000	70,600	346,000
<b>Rutile:</b>							
Australia	31,700	41,400	145,000	29,700	49,600	35,200	115,000
Canada <sup>2</sup>	3	8	34,300	11,600	20,000	8,010	39,600
Sierra Leone	13,000	6,000	27,000	--	--	--	--
South Africa	38,500	31,700	170,000	47,000	39,400	62,000	148,000
Other <sup>2</sup>	653	704	2,160	187	405	894	1,490
Total	83,900	79,800	379,000	88,500	109,000	106,000	304,000
<b>Synthetic rutile:</b>							
Australia	19,000	--	64,700	11,400	52,900	15,000	79,300
Malaysia	--	--	2,110	548	236	942	1,730
South Africa	5,000	2,000	15,000	--	3,000	2,340	5,340
Other <sup>2</sup>	--	--	19	40	120	353	513
Total	24,000	2,000	84,800	12,000	56,200	18,700	86,900
Titaniferous iron ore, Canada <sup>2</sup>	72	--	72	--	51,800	35,200	87,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM PIGMENT<sup>1</sup>

(Metric tons)

	2007			2008			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
<b>80% or more titanium dioxide:</b>							
Belgium	1,040	1,560	4,920	1,250	1,060	277	2,590
Canada	22,400	18,800	81,100	20,900	20,100	19,800	60,800
China	2,410	1,910	12,900	1,480	1,540	944	3,960
Finland	2,630	3,380	12,000	2,560	2,550	2,310	7,410
Germany	1,320	1,120	5,960	1,510	1,270	1,050	3,820
Italy	1,310	1,990	6,080	1,230	1,850	1,430	4,510
Japan	1,050	570	3,440	888	1,020	686	2,590
Mexico	612	542	3,320	1,130	1,350	561	3,050
Netherlands	1,270	648	3,790	591	950	644	2,190
Spain	2,070	2,260	10,500	1,620	1,760	830	4,210
Ukraine	1,150	1,140	4,060	2,250	1,100	531	3,870
United Kingdom	974	353	3,970	431	180	191	802
Other	4,050	2,390	15,000	3,550	3,000	2,570	9,120
Total	42,200	36,700	167,000	39,400	37,800	31,800	109,000
<b>Other titanium dioxide:</b>							
Canada	563	723	2,340	1,040	1,490	1,890	4,410
China	223	213	826	203	279	315	797
Finland	47	51	184	53	71	73	197
France	118	61	275	179	179	85	443
Germany	210	152	688	242	208	92	542
Japan	175	348	699	193	214	224	631
Korea, Republic of	326	266	920	30	218	275	523
Other	93	148	631	171	223	211	605
Total	1,760	1,960	6,570	2,110	2,880	3,160	8,150
<b>Unfinished titanium dioxide:<sup>2</sup></b>							
China	2,780	2,640	14,600	2,460	3,520	1,920	7,890
Czech Republic	566	535	2,730	689	562	573	1,820
France	1,040	322	4,110	587	737	706	2,030
Germany	1,410	1,870	6,250	1,240	1,290	1,070	3,600
Japan	1,570	1,390	4,820	1,770	1,720	1,220	4,710
Korea, Republic of	1,340	848	4,940	878	706	550	2,130
United Kingdom	2,290	1,880	7,080	1,920	1,190	991	4,100
Other	309	164	2,640	688	923	1,140	2,750
Total	11,300	9,640	47,300	10,200	10,600	8,170	29,000
Grand total	55,300	48,300	221,000	51,700	51,300	43,100	146,000

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 6  
PRICES FOR TITANIUM MATERIALS

(End of period)

		2007		2008		
		Third quarter	Fourth quarter	First quarter	Second quarter	Third quarter
<b>Concentrate:</b>						
Ilmenite, f.ob. Australian ports <sup>1</sup>	dollars per metric ton	\$75- \$85	\$75- \$85	\$80- \$130	\$84- \$137	\$84- \$137
Titanium slag, import <sup>2</sup>	do.	417- 430	418- 457	433- 576	409- 555	393- 555
<b>Rutile, natural:<sup>1</sup></b>						
Bagged, f.o.b. Australian ports	do.	600- 700	650- 700	700- 750	700- 750	675- 725
Bulk, f.o.b. Australian ports	do.	450- 500	475- 500	490- 520	490- 520	500- 550
<b>Metal:</b>						
Sponge metal, import <sup>2</sup>	dollars per pound	7.23- 8.25	6.33- 7.06	5.69- 8.30	5.96- 8.29	6.37- 8.13
Titanium mill products	producer price index <sup>3</sup>	288	277	259	247 <sup>f</sup>	247
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) <sup>4</sup>	dollars per pound	1.75-1.80	2.00- 2.05	2.10- 2.15	2.10- 2.15	1.85- 1.95
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti <sup>4</sup>	do.	3.60- 3.65	3.80- 3.85	3.75- 3.85	3.70- 3.80	3.45- 3.55
<b>Pigment:</b>						
Titanium dioxide pigment, import <sup>2</sup>	dollars per metric ton	1,990	2,010	2,050	2,120	2,170
Titanium dioxide pigment	producer price index <sup>3</sup>	162	160	165	166 <sup>f</sup>	174

<sup>f</sup>Revised. do. Ditto.

<sup>1</sup>Source: Industrial Minerals (London).

<sup>2</sup>Unit value based on landed-duty-paid U.S. imports for consumption.

<sup>3</sup>1982=100. Source: U.S. Department of Labor, Bureau of Labor Statistics.

<sup>4</sup>Source: Platts Metals Week.